



## MERCED IRRIGATION DISTRICT

1066

September 20, 1999

Lester A. Snow, Executive Director  
CalFed Bay-Delta Program  
1416 Ninth Street, Suite 1155  
Sacramento, CA 95814

Dear Mr. Snow:

The following are Merced Irrigation District's (Merced ID) comments on the CalFed Draft EIR/EIS and its supporting documents. The comments are organized by identifying the specific CalFed document and page number with the quoted text from the document followed by Merced ID's comments on the text. In some instances, several quotes on a particular topic are given followed by our comments on that topic.

**CalFed document: Draft EIR/EIS, 7.7-5**

"The Merced River historically supported populations of spring- and fall-run chinook salmon that averaged 12,000 fish per year. The salmon run on the Merced River declined and was in poor condition for at least 20 years before the construction of Lake McClure. Operation of the dam has improved the project flow conditions, and salmon habitat improvement projects have effectively maintained chinook salmon populations."

**Comment:**

It is our understanding that there are no accurate estimates of salmon runs in the Merced River prior to dam construction. If this is the case, the document should delete the reference to specific run sizes. If this is not the case, then the document should cite the source for the information. Also, the CalFed text, as written, mistakenly implies that spring-run chinook presently exist in the Merced River which is not correct.

**CalFed document: Volume 1, Ecosystem Restoration Program Plan, Page 59**

"Temperatures in the San Joaquin River tributaries (Mokelumne, Stanislaus, Tuolumne, and Merced rivers) are controlled by a combination of cold- water reservoir releases and streamflow management. Although initial efforts to monitor and control water temperatures on these rivers have begun, the upstream segment of each may require additional reservoir and flow management actions. Actions similar to those described above for Shasta, Oroville, New Bullards Bar, and Folsom Dams could be implemented. Long-term agreements to adaptively manage reservoirs on these San Joaquin River tributaries are needed to provide the best possible flow and temperature conditions for fish habitat while also protecting the other existing beneficial water uses."

**Comment:**

The CalFed document mistakenly compares New Exchequer Dam to other Central Valley dams as related to water temperature control. This is not valid and must be corrected in the final document. Unlike the other dams described in the CalFed document, New Exchequer draws water from the bottom of the reservoir in the hypolimnion and water temperature management cannot occur in the simplistic manner described in the CalFed document. Additionally, there are three additional reservoirs downstream of New Exchequer that are known to influence temperatures in the lower Merced River. Unlike other Central Valley reservoirs that are relatively easy to model and control water temperatures in downstream salmon reaches (e.g., Shasta Reservoir), the three re-regulating reservoirs downstream of Lake McClure significantly increase the complexity for controlling water temperatures to benefit salmon in the Merced River. This latter fact also demonstrates the dissimilarity between New Exchequer Dam's effects on temperatures as compared to the dams referenced in the CalFed document. Merced ID does plan to pursue an investigation into what options, if any, may exist to improve the water temperature regime in the lower river. However, CalFed must not assume that water temperature management can occur in the manner described in the Draft EIR/EIS documents until the results of this investigation are completed.

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 416**

"Spawning and rearing habitat in the Merced River is the most degraded among the San Joaquin basin tributaries. Legally required summer flow releases are low (15 to 25 cfs) and are usually depleted before they reach the river mouth because of small water diversions throughout the lower river."

**Comment:**

During drought years in the late 1980s and early 1990s, profuse water hyacinth growth in the lower Merced River encompassed large portions of the channel's wetted perimeter and created problems for upstream and downstream fish passage. This condition was one of the primary reasons the Merced River was historically characterized as possessing degraded fish habitat. However, a combination of an aggressive water hyacinth eradication program by Merced County and higher flow conditions during recent years has eliminated the problem for fish. The final CalFed document should reflect this fact.

The CalFed document also mistakenly concludes that the Merced River is usually dewatered during the summer months and that low flows during the summer months have degraded the spawning and rearing habitat. This is not accurate and must be corrected in the final document. There are no areas in the lower Merced River that become dewatered during the summer months. Also, the salmon spawning period is in the fall and winter and rearing occurs in the winter and spring in the upper reaches of the Merced River, not during the summer in the lower-most reaches as suggested by the CalFed document. The final document must reconcile this inconsistency on salmon life cycle periodicities and the naturally-occurring, seasonally available habitats in the Merced River.

"Flow releases are not sufficient to accommodate salmon migration, spawning, egg incubation, juvenile rearing, and smolt emigration on the Merced River. Flows in the spawning reach during the spawning and early rearing period are further depleted by water diversions. Spring flows for smolt emigration are particularly inadequate."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 435**

"The current spawning and rearing flow requirements are not the result of scientific studies and may be too low to meet spawning and rearing needs. Flows in the spawning reach during the spawning and fry rearing period are further depleted by water diversions. Spring flows for smolt emigration are particularly inadequate."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 434**

"Target 5: Provide the following 10-day spring flow events on the Merced River: 1,000 to 1,500 cfs in late April or early May in dry years, 2,000 to 2,500 cfs in normal years, and 3,000 to 4,000 cfs in wet years. Such flows would be provided only when inflows to Lake McClure are at these levels."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 417**

"Adequate releases for upstream attraction of adults and spawning begin on November 1, but upstream migration typically begins in October. The present spawning and rearing flow requirements were not established by scientific studies and are too low to meet spawning and rearing needs."

"The most significant deficiencies in the present flow requirements for chinook salmon occur in the spring emigration period."

**Comment:**

The entire topic of appropriate instream flows for salmon in the Merced River is being evaluated by cooperative projects between the California Department of Fish and Game (CDFG) and Merced ID. CalFed's assumptions on instream flows for salmon in the Merced River are speculation and not based on facts or authoritative information or citations. As pointed out elsewhere in the CalFed documents, there are no site-specific, empirical instream flow evaluations upon which to base instream flow recommendations for the Merced River.

Merced ID and CDFG have jointly developed a 10-year study program to determine the potential factors that may limit salmon production in the Merced River. This program is designed to evaluate the habitats necessary for increased salmon production by assessing the needs for each freshwater salmon life stage (i.e., upstream migration, spawning, egg incubation, fry and juvenile rearing, and outmigration). The joint study program defines the objectives, basic experimental design, and the responsibilities for study implementation. The studies and instream flow scheduling will be coordinated with other studies throughout the San Joaquin basin and the Delta. Components of this program are presently underway. The completion of the 10-year

1066

program is intended to identify the long-term instream flow and other needs of salmon in the Merced River. To facilitate the studies, the parties have established the Merced Management and Technical Advisory Committees; the latter committee establishes and coordinates study protocols, study amendments, funding issues, and information sharing and exchange. In addition, Merced County, Merced ID, and CDFG are developing a larger-scale "stakeholder" involvement program to ensure watershed issues affecting the Merced River are addressed in a comprehensive manner.

Until the joint CDFG/Merced ID river investigations are complete, it is premature and inappropriate for CalFed to suggest or recommend instream flow schedules in the Merced River.

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 24**

"STEELHEAD TROUT (R) POPULATION TARGET: Increase naturally spawning population number and sizes sufficient to maintain population resiliency and to allow m&a-population persistence through periods of adverse climatic and ecological conditions. This would entail, at a minimum, restoring and maintaining viable populations in the upper Sacramento, Feather, Yuba, American, Mokelumne, Stanislaus, Tuolumne, and Merced rivers, and Battle, Clear, Big Chico, Butte, Antelope, Mill, and Deer creeks."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 384**

"The three major eastside tributaries to the San Joaquin River-the Stanislaus, Tuolumne, and Merced rivers-support spawning and rearing habitat for fall-run chinook salmon, steelhead, rainbow trout, and perhaps late-fall-run chinook salmon. Substantial evidence exists to show that there is an extant self-sustaining steelhead run in the San Joaquin Basin. Since 1995, a small, but consistent, number of juvenile steelhead that exhibit smolt characteristics have been captured in rotary screw traps at two chinook salmon monitoring sites on the lower Stanislaus River (Demko and Cramer 1997; 1998). The presence, over multiple years, of juvenile steelhead that have undergone smoltification and are actively migrating to the ocean is sufficient evidence to conclude that natural production is occurring and a self-sustaining population exists. This is also the opinion of the Department of Fish and Game (CDFG 1997), the Steelhead Project Workteam of the Interagency Ecological Program (IEP Steelhead Project Workteam 1999) and apparently the Department of Water Resources and the US. Bureau of Reclamation (DWR and USBR 1999). It is the opinion of the Department of Fish and Game that small runs of steelhead still exist in the Tuolumne and Merced Rivers as well (CDFG 1997)."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 417**

"The river now supports fall-run chinook salmon and perhaps steelhead and late-fall-run chinook salmon."

"As with the Stanislaus and Tuolumne Rivers, the number of late-fall-run chinook salmon and steelhead in the Merced River is unknown."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 419**

"Each year, a few large rainbow trout, possibly steelhead, enter the Merced River Hatchery (MRH). Also, an adult steelhead was captured immediately above the Hills Ferry Salmon Barrier just upstream of the Merced River confluence in November, 1996 (Mayott 1997). Because there has been no focused effort to assess the steelhead population in the Merced River, and there is essentially no indirect or bycatch information from other monitoring programs on which to estimate a probability of extinction, there is no information available to conclude that steelhead are extirpated from the Merced River. This fact, and the anecdotal information and observations cited above, has led CDFG to conclude that a remnant steelhead population still exists in the Merced River (CDFG 1997)."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 419**

"Steelhead recovery options for the Merced River have not been addressed by the management agencies. However, the ESA listing of steelhead populations in the San Joaquin tributaries will necessitate that options be identified and implemented. As with other regulated rivers in the Central Valley, recovery measures will need to focus on providing access to historical habitats and/or maintaining adequate water temperatures below dams for oversummer rearing of juveniles. These issues will need to be addressed in future recovery planning."

"In the lower Stanislaus, Tuolumne, and Merced rivers, emphasis will be on restoring fall-run chinook salmon and steelhead populations."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 425**

"Also, adequate cold water releases from Lake McClure should be made to maintain suitable water temperatures in summer and early fall for juvenile steelhead rearing."

**CalFed document: Volume 2, Ecosystem Restoration Program Plan, Page 424**

**"MERCED RIVER ECOLOGICAL MANAGEMENT UNIT** The vision for the Merced River Ecological Management Unit includes maintaining suitable water temperatures, restoring streamflow, coarse sediment recruitment, and stream channel and riparian habitat to improve habitat for fall-run chinook salmon, late-fall-run chinook salmon, steelhead, riparian vegetation, and wildlife resources. The vision also includes restoring the important ecological functions and processes that will improve habitat for fall-run chinook salmon, late-fall-run chinook salmon, steelhead, native amphibians and reptiles, riparian vegetation, and wildlife resources."

**Comment:**

The CalFed documents have grossly overstated what is assumed concerning the presence of steelhead and late-fall-run chinook in the Merced River. Steelhead have never been documented to have occurred in the Merced River pre- or post-dam construction. Although small numbers of rainbow trout and brook trout have been found in the upper-most reach of the lower Merced

River, the available evidence suggests that these fish originated from the Calaveras Trout Farm near Crocker-Huffman Dam. Rainbow trout and brook trout are known to escape from that hatchery facility into the lower Merced River. This is attributable to the facility's Merced River water supply intake and the hatchery effluent entering back into the Merced River. Furthermore, hatchery rainbow trout from the trout farm have historically been planted in Merced River reservoirs (e.g., McSwain and McClure) and planted trout are known to have moved downstream through the reservoirs. It would be erroneous for CalFed to assume the rainbow trout found immediately downstream of Crocker-Huffman Dam are steelhead without empirical evidence of their origin. The origin of these fish should be determined through genetic evaluations which are presently being conducted.

Because chinook salmon exist in the lower Merced River, CalFed should not assume that steelhead could co-exist in the same watershed; the habitat needs for the two species are not identical. Although there are general similarities between some habitat characteristics for steelhead and chinook salmon, they are not identical. This fact is particularly important as it relates to the lower Merced River. The low gradient and restricted in-stream cover in the lower Merced River are not the habitat characteristics where steelhead are typically found. Steelhead are known to prefer higher gradient streams and substantially more in-channel structure (e.g., large rocks and boulders) than the channel types preferred by chinook salmon. The lower Merced River does not naturally possess those habitat characteristics necessary to support a self-sustaining steelhead population. As such, the lower Merced River cannot be considered viable habitat for Central Valley steelhead when compared to other areas where steelhead naturally occur (i.e., Sacramento River tributaries).

Furthermore, the lower Merced River lacks over-summering habitat necessary for steelhead production. Unlike juvenile chinook salmon which migrate to the ocean as sub-yearlings during the winter or spring months, the steelhead's freshwater life cycle requires rearing in the riverine environment for one or more years prior to entry into the saltwater environment. The relevance of this fact as it pertains to the proposed designation of steelhead critical habitat is that summer water temperatures in the lower Merced River are unfavorable or lethal for steelhead rearing. During the summer months, nearly the entire lower Merced River possesses very unsuitable or lethal conditions for steelhead because of high ambient air conditions causing warm riverine water. At best, under optimal hydrologic and atmospheric conditions, there is only a very small reach immediately downstream of Crocker-Huffman Dam that could theoretically provide tolerable water temperatures for over-summering juvenile steelhead. However, during below-normal or dry hydrologic conditions, the entire lower Merced River would probably be lethal for steelhead during the summer months. This circumstance demonstrates that the lower Merced River cannot provide habitat for steelhead because the species could not sustain itself in the watershed every year.

CalFed should also recognize that recent efforts to improve the Merced River fishery resource have focused on improving conditions for fall-run chinook salmon production. Attempts to artificially introduce steelhead in the lower Merced River will result in inter-species competition and predation. Yearling steelhead are known to prey on chinook salmon fry. Unlike the Sacramento River basin where chinook salmon and steelhead co-exist (usually in geographically separate reaches of tributaries), the lower Merced River possesses highly seasonal and very spatially-restricted habitats for salmon. In contrast to the San Joaquin River basin, Sacramento River tributaries provide habitats where steelhead and chinook salmon can co-exist in different portions of the watershed (i.e., steelhead in the upper, high-gradient reaches and chinook salmon in the lower-gradient, valley floor reaches). These geographically separate habitats are not

available in the lower Merced River because of the impassable dams in the foothills. Providing upstream and downstream fish passage facilities at New Exchequer Dam is not feasible because of the dam's height and large volume of the reservoir. Introduction of steelhead into the lower Merced River will "force" steelhead to attempt existence in stream reaches currently inhabited by chinook salmon and in habitats unsuitable for their normal freshwater life cycle needs. The CalFed documents must acknowledge the fact that steelhead exhibit a freshwater life history pattern that is incompatible to the habitats available in the lower Merced River. The normal freshwater life history pattern for steelhead does not correspond well with naturally-occurring conditions in the lower Merced River. Because the Merced River is the southern-most range for chinook salmon, the freshwater life cycle timing for chinook salmon is marginal because of warm-water conditions in the late spring, summer, and early fall. Water temperatures measured at various locations in the lower Merced River have empirically documented this fact. Assuming steelhead were artificially introduced into the lower Merced River, steelhead would spawn later than chinook salmon based on their reproductive timing elsewhere in the Central Valley (i.e., winter instead of fall). This circumstance would result in a later timing for steelhead egg incubation into the spring and early summer months. Although water temperatures would be suitable for steelhead egg incubation during the winter, water temperatures during the late spring and early summer would be lethal to incubating eggs which is probably a reason why steelhead reproduction has never been documented in the lower Merced River.

We must emphasize that CalFed should not rely upon anecdotal information to formulate conclusions concerning the potential existence of steelhead or potential steelhead habitat in the lower Merced River. There is no empirical evidence to support the premise of steelhead production in the lower Merced River. The available evidence indicates that the lower Merced River could not support a sustained steelhead population. The CDFG's 1995 report to the U.S. Congress stated:

"Just prior to the construction of Friant Dam, there were no steelhead populations in the upper mainstem San Joaquin River, Merced, Tuolumne, and Stanislaus rivers."

Also, CDFG's "Central Valley Salmon and Steelhead Restoration and Enhancement Plan" states:

"Steelhead were probably *never* very abundant in any of the drainages except the Sacramento River." (emphasis added)

It would be prudent for CalFed and the natural resource agencies to first determine if it is even feasible for steelhead to exist in the Merced River. This approach is important given the fact that natural habitats in the lower Merced River exhibit undesirable conditions to support the steelhead's freshwater life cycle on a sustained basis. Water temperatures during the summer months limit or exclude the potential for steelhead production. Therefore, the Merced River cannot be considered as essential to steelhead production in the Central Valley.

The CalFed document also provides erroneous information on the potential existence of late-fall-run chinook in the Merced River. Late-fall-run chinook salmon are known to not exist in the Merced River which has been empirically confirmed by recent spawning ground surveys and juvenile sampling. It is not feasible to have a late-fall-run chinook population in the Merced River because those fish would spawn in the late winter and early spring seasons; their eggs would have to incubate in the river gravels for an extended period into the summer months when water temperatures are lethal. Therefore, CalFed should delete all reference to late-fall-run chinook in the Merced River.

**“CENTRAL VALLEY STREAM TEMPERATURES TARGET 1:** Maintain maximum surface water temperatures on the lower Merced, Tuolumne, and Stanislaus rivers to the downstream boundary of the salmon spawning area (as defined by Fish and Game Code section 1505) during summer, fall and winter and to the mouth of the river during the spring as follows:

- June 1 through September 30, 60°F
- October 15 through February 15, 56°F, and
- April 1 through May 31, 65°F”

**Comment:**

Recent empirical evaluations in the Merced River have clearly demonstrated that the CalFed water temperature targets are impossible to achieve because of naturally occurring conditions in the Merced River watershed. Also, as previously described, water released into the Merced River is released from the hypolimnion at the bottom of Lake McClure, but complex hydraulics and thermodynamics in the three downstream reservoirs from New Exchequer Dam significantly affect the ultimate water temperature regime in the salmon spawning and rearing reach of the lower Merced River. For these reasons, additional water temperature investigations are underway and planned by Merced ID to evaluate the appropriate water temperature conditions in the Merced River. Pending the outcome of those studies, CalFed should delete any reference to site-specific, numerical water temperature targets in the Merced River.

**Concluding Comments:**

The CalFed documents do not adequately articulate the fact that the degree of impact associated with potential factors affecting the abundance of Merced River fall-run chinook salmon is uncertain and not fully understood. Accordingly, a phased, systematic and adaptive approach to implementation has been formulated for the Merced River by Merced ID and CDFG that identifies the degree of impact for each factor, prioritizes management actions, obtains funding and implements management actions, evaluates fish or habitat response, and adopts or refines the conservation action. CalFed should also adopt this approach for the Merced River.

CalFed must also formally recognize the fact that the Merced River fall-run chinook salmon population is affected by conditions within each of the regions inhabited throughout its life cycle including, the Merced River, the larger San Joaquin River basin, the Sacramento-San Joaquin Delta estuary, and the Pacific Ocean. Habitat and fishery management conditions in each of these regions affect salmon originating from the Merced River. The factors that have contributed to the current population status of San Joaquin River basin fall-run chinook salmon stocks are varied and interact among each of these areas. An acknowledgment that habitat and fishery management conditions outside the Merced River can frequently have large impacts on Merced-produced salmon (e.g., SWP/CVP diversions in the Delta, excessive harvest rates on San Joaquin Basin stocks) should be prominently portrayed at appropriate locations in the CalFed documents.



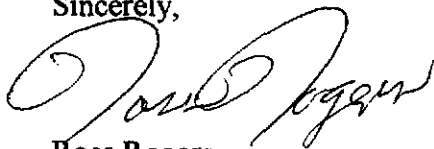
1066

Merced ID is presently working with the natural resource agencies on strategies required for the conservation management of fishery resources and their habitats in the lower Merced River. The general approach we have employed focuses on systematic investigations and development and implementation of management actions for Merced River habitat elements that contribute to a properly functioning ecosystem sufficient to sustain survival and reproduction of fall-run chinook salmon. The first objective is to identify and specify the relative magnitude of threats posed by localized activities on the survival of fall-run chinook salmon in the lower Merced River. The second is to prioritize these threats, abate threats where possible, and reduce threats to the greatest extent possible for those that cannot be entirely eliminated. The third objective is to stabilize and/or enhance conditions in the lower Merced River available as habitat for anadromous fish. Each of these objectives are expected to be pursued through conservation strategies and actions for which fish response or improvement in habitat quality can be measured. Although the primary focus of this strategy is conservation and enhancement of the Merced River fall-run chinook salmon stock, it will likely also benefit other San Joaquin Basin fall-run chinook salmon stocks and is ultimately expected to benefit other aquatic and riparian dependent species inhabiting the San Joaquin Basin and Sacramento-San Joaquin Delta.

Unfortunately, the CalFed draft documents, as written, display a significant departure from this proactive and adaptive approach by relying on speculation, anecdotal accounts, non-authoritative sources, selective (bias) reporting of the facts, and non-scientific, unsupported, and incorrect information. We are hopeful that CalFed will correct these serious deficiencies concerning the Merced River and incorporate our preceding comments in the final documents.

Thank you for the opportunity to comment on the CalFed documents.

Sincerely,



Ross Rogers  
General Manager